on gold standard paper and pencil tests. The computer version of the tests and touch screen make possible to examine patients with motor disabilities - such as patients with Parkinson's Disease. The specific data management system make possible to eliminate data with artifacts.

Selected tests from the system are used as a cognitive stimulation during neurophysilogical assessment (EEG, EMG, EOG) and during neuroimaging, especially with F-MRI.

S61.02

Neuromaging of cognitive impairment in schizophrenia and neurodegenerative disorders

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Cognitive dysfunction such as impairment of memory, attention, spatial and verbal functions plays important role in etiopathogenesis and clinical picture in neurodegenerative disorders. There are related with structural and functional abnormalities of different region of the brain connected with these cognitive processes. Cognitive dysfunctions caused severe functional and social disabilities of the patients. The neuroimaging methods such as F-MRI, or PET scan are very useful in diagnosis of structural and functional changes in the brain in neurodegeneration diseases, e.g. Parkinson's or Alzheimer's diseases. Neuroimaging during cognitive stimulations show different brain activation in patients with schizophrenia or neurodegenerative disorders in comparison to healthy subjects. F-MRI show increase of prefrontal cortex activation during n-Back test performance in healthy controls, while in patients with schizophrenia and Alzheimer disease this effect was not noted. In schizophrenia patients after treatment with risperidone (but not with haloperidol) the normalization of activation in different brain area was observed.

F-MRI assessment during N-back test (0 - back and 1-back tasks), encoding and recognition, visual discrimination performed in 9 patients with Alzheimer's Disease (AD) and 9 healthy subjects show abnormal activation in patients with AD. Among 9 patients with AD 5 were treated with rivastigmine, 4 received placebo. Cognitive improvement was observed after 3 months of treatment with rivastigmine - the same time fMRI showed an increase in brain activity in regions involved in attentional processes. This indicate that neuroimaging methods during cognitive stimulation may be useful in cognitive assessment in CNS disorders and in assessment of drug effect on cognition.

S61.03

Glutamatergic and dopaminergic system genes polymorphism in prefrontal tests performance in schizophrenia, bipolar disorders and in healthy subjects

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Prefrontal functions impairment in schizophrenia and bipolar disorder are are markers of vulnerability to the diseases. Our previous data showed association between Wisconsin Card Sorting Test (WCST) performance in schizophrenia with the polymorphism of dopaminergic genes)COMT, DRD 1) and with polymorphism of Brain-derived neurotrophic factor (BDNF) in bipolar disorders. The Src-family tyrosine kinase Fyn plays important role in the interaction between BDNF and glutamatergic receptor NMDA in prefrontal cortex. The possible association between the polymorphisms of BDNF and Fyn genes and performance on WCST and N-back tests in healthy subjects were assessed in 200 healthy persons, genotyped for the two polymorphism of BDNF gene (C/T, Val66Met) and three polymorphisms of the Fyn gene (-93 A/G, IVS10+37T/C, Ex12+894T/G). In the whole group, the T/T genotype of C-270T BDNF polymorphism was associated with higher percentage of conceptual responses on WCST. Male subjects with C/T genotype obtained better results on percentage of correct reactions in N-back test. No significant differences between any of Fyn gene polymorphisms and WCST performance were found. Better results on percentage of correct reactions in N-back test were obtained by subjects with G/G genotype of 93A/G polymorphism and with G/G genotype of FYN T/G polymorphism. Female subjects having T/T polymorphism of T/C polymorphism performed better as to percentage of correct reactions in N-back test. The results obtained may suggest a contribution of BDNF and glutamatergic system genes to working memory efficiency in healthy subjects and bipolar disorder, while in schizophrenia with dopaminergic system genes.

S61.04

Neuropsychological prefrontal dysfunction in pathological obesity in the molecular genetics context

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Pathological obesity may be related with impairment of impulse control and cognitive disturbances. In this study the cognitive frontal functions in relation to the polymorphism of candidate genes in patients with pathological obesity were assessed. The prefrontal functions were evaluatedmusing Wisconsin Card Sorting Test. The polymorphisms of genes connected with serotoninergic and dopaminergic system : 5HT2A, 5HT2C, 5HTT, DAT1, and COMT, and also the polymorphism of BDNF - involved with modulation of nervous system development and neuroplasticity were assessed. Polymorphisms of the genes were detected by RFLP and VNTR PCR methods.

The 100 subjects with pathological obesity, BMI>40 operated with Mason method were enrolled. The results of WCST were compared with the results of healthy sex, age and education matched controls.

Subjects with pathological obesity show significant worse results on all domains of WCST, compared to controls. The frequencies of the polymorphisms in the obese group were: 5HT2A -1438A->G - A/A - 11%, A/G - 50%, G/G - 39%; DAT1 VNTR in 15th exon - short/short - 13%, short/long - 34%, long/long - 53%; BDNF Val66Met (G->A) - A/A - 3%, A/G - 24%, G/G - 73%. Interesting results were obtained in the case of 5HT2C: a known polymorphism (-759C->T) could not explain the banding pattern observed. It is possible that we have found a novel polymorphism that strongly correlates with obesity. The results obtained show significant prefrontal dysfunctions in patients with pathological obesity which may be related to the polymorphisms of serotonin and dopaminergic system genes and possible association of the obesity with the new polymorphism of 5HT2C gene.

Symposium: Family burden: Dimensions, determinants and interventions

S50.01

Caregiver burden during a 2-year follow-up period

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